

**Water Trading – Panacea or Placebo**  
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**Introduction**

Water trading is often seen as the cure for all the ills of the inland rivers of south eastern Australia. The current drought and broader concerns about the availability and management of water have led to calls for immediate action to institute and accelerate water trading.

State governments are often seen as part of the problem. In particular it has been argued that:

- ▼ The scarcity of water has been made much worse both for irrigators and the environment by the over-allocation of rural water entitlements.
- ▼ The effect of this over-allocation have been made much worse by impediments to water trading instituted by recalcitrant State governments.

In my talk today I propose to consider the benefits and limitations of water trading – what trading can achieve and what is better performed by other instruments. I will also consider the contributions that trading can make to address the problems in the Murray Darling basin.

The case for trading is that it encourages water to move to the uses which are the most highly valued by society. For a trade to occur, a willing seller must deal with a willing buyer. This voluntary transaction benefits both parties. Society as a whole will also benefit unless there are significant adverse effects on third parties (such as the environment) which are not addressed by other policies and for which compensation is not paid.

Trading is most likely to be effective in encouraging good use of water where ownership of water is clearly defined and where there are clear rules governing the acquisition and sale of water. Australian governments (including NSW) have made considerable efforts over a number of years to separate the title for water from the title to land and to clarify who owns water.

Trading is most likely to be effective in moving water to its best use if all potential uses can compete for water on an equal basis. This includes environmental and town uses as well as agricultural use. (Governments or interested individuals or groups might purchase water on behalf of the environment.) This suggests that any existing restrictions on trading may need to be reconsidered, including restrictions on trading between catchments and interstate trading of water.

The establishment of effective systems for trading water has been a notable achievement of the NSW public sector and its counterparts. Australian arrangements for water trading are in advance of those that occur in most other parts of the world, According to Roger Bate, an expert from the United States, "all jurisdictions, notably in the U.S. states ... and other western states, could do worse than adopt some of the trading knowledge learned in Australia."

Water trading is quite active and has been so for some time. Despite the drought - or perhaps because of it - water trading seems to be growing. The amount of water traded in NSW has increased rapidly in recent years. In 2007/08 there were over 6,400 temporary trades amounting to 711GL in NSW<sup>1</sup> (compared to 1600 trades amounting to 290GL in 2004/05). Interstate transfers of water amounted to 26% of these temporary trades<sup>2</sup> (compared to 7.5% in 2004/05). In 2007/08, there were also 875 permanent trades amounting to 547 GL.<sup>3</sup>

In Victoria in the same year the total volume of temporary trades was 568GL and the total volume of permanent trades was 224GL.<sup>4</sup>

There are also limitations to trading. Some of these limitations arise because of the physical nature of water and the catchments from which it is taken. For example:

- ▼ Water is heavy and bulky and is expensive to transport except by gravity through rivers and streams. It would not be economic, for example, to take water from the Murray and sell it upstream to Queensland.
- ▼ There can also be environmental issues and difficulties associated with trading water particularly where run of river schemes are used to transfer it.

Other limits arise from concerns about the consequences of water trading for particular communities and the distribution of income. Competition increases prosperity by encouraging greater efficiency in the use of resources but often disrupts established ways of doing things in the process. Those who are concerned about the future of particular communities may understandably be concerned about extending the scope of competition.

Others may doubt the effectiveness of trading. Many farmers value the farming lifestyle and would be reluctant to give up their entitlement to water, particularly in the short term, even if they could profit from doing so.

Much investment in irrigation is a sunk cost which cannot readily be transferred to another user. Owners (both government and private) may be willing to accept a low rate of return. This makes it easier for farmers who wish to do so to remain on the land for some time.

The rules governing the transfer of water in NSW (ie, who can trade with whom) are very complex. Rules are imposed both by State Government authorities and by privately owned irrigation companies on behalf of their members.

Trading can only occur where there is a physical, hydrological link between valleys. In addition, trading can only occur where a Water Sharing Plan is in place and to the extent permitted by the Water Sharing Plan. Some plans have limited the movement of water in and out of a river. Some private irrigation companies have tried to limit trade for example by imposing entry and exit fees. There are, however, moves to remove these.

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<sup>1</sup> Department of Water and Energy, personal communication, 25 February 2009.

<sup>2</sup> Ibid.

<sup>3</sup> National Water Commission, *Australian Water Markets Report 2007-08*, p 22.

<sup>4</sup> Ibid, pp 22 and 24.

In practice, water trading is likely to form one component of a broader policy approach to address the problems of the inland rivers. Other policies such as better information about what water is available and (as we will argue later) full recovery of the costs of providing infrastructure are required to make water trading work. Moreover, trading is likely to be supplemented by a cap on allocations and, it seems, further public investment in irrigation infrastructure.

The Commonwealth Government's recent *Water for the Future* plan<sup>5</sup> demonstrates in our view a degree of ambivalence about the ability of water trading to address the problems of the inland rivers. Some elements of the package are clearly consistent with the market approach. (These include the proposal to spend \$3.1 billion to buy back water entitlements and the proposal to spend \$450million to improve the quality and usefulness of water information.<sup>6</sup>) The revision of the cap on the amount of water that can be taken out of rivers and groundwater systems and the establishment of the Murray-Darling Basin Authority arise from a planning rather than a market-based approach. However, a cap can operate in conjunction with trading as occurs in NSW at present.

However, the proposal to spend \$6 billion over 10 years "investing in key rural water projects that save water by upgrading out-dated, leaky irrigation systems"<sup>7</sup> would seem to be unnecessary if we were confident that water trading would result in the correct market price for water. Individual irrigators or groups of irrigators would then find it worthwhile to make much of this investment themselves. Indeed, we would argue that irrigators are likely to make better investment decisions using their own money and based on market criteria than political or administration decision-makers who typically have little local knowledge and spend public money. There is evidence of much private investment to improve water use efficiency in recent years.

Alternatively, irrigators might take advantage of high entitlement charges to sell part of their entitlement and hence reduce their demand on water resources.

It seems likely that, for the foreseeable future, water trading will form one element of a mixed approach to address the problems in the inland rivers. However in this area, as in others, competition and choice are powerful forces that can lead to better outcomes. It is to be hoped that community views will permit the expansion of water trading in the years ahead. This is likely to lead to a more productive use of water, and better environmental outcomes, in the Murray Darling basin.

### Market Pricing and Cost Based Pricing

It is important to distinguish between the market price for water which is established by trading and the administered price for making water available which is set by bodies such as IPART. Irrigators now own their share of the water that is available for consumptive use. This means that they benefit from the scarcity value of water.

<sup>5</sup> This is a ten-year, \$12.9 billion plan aimed at securing water supplies and restoring rivers. Department of the Environment, Water, Heritage and the Arts, *Water for the Future – Fact Sheet*, downloaded on 25 February 2009 from: [www.environment.gov.au](http://www.environment.gov.au).

<sup>6</sup> See: [www.bom.gov.au/water](http://www.bom.gov.au/water).

<sup>7</sup> Department of the Environment, Water, Heritage and the Arts, op. cit.

A key to efficient water use is the market price of bulk water. In the Murray-Darling basin irrigators face a choice about whether to use their water entitlement on their own farm, or whether they would be better off selling it to someone else who values it more because they can put it to more profitable use. In principle, if a cotton farmer is continuing to use water, it is because that cotton farmer is getting a greater return (net of the costs of production, including the water) than would be possible from any alternative use of the water.

High market prices for water encourage water use efficiency. They encourage irrigators to find ways of reducing the amount of water they use, either on a temporary or permanent basis.

As noted, the value of water to a farmer depends on the returns he or she achieves from using the water, less costs. One of these costs is the charge levied by water authorities for making water available. Other things being equal, a high charge for making water available will reduce rather than increase the market price of water. This suggests that bulk water charges levied by government authorities are unlikely to be effective in achieving demand management objectives. Rather, their role is to recover the costs of making water available.

The cost of supply of bulk water is not an irrelevant or trivial consideration. The difference between the supply cost of water and the market price of water accrues to the holder of a water right on sale. If the cost of making water available is understated there is a transfer payment from taxpayers – who are obliged to meet the shortfall between the cost of supplying water and the price the bulk water provider charges – to the property rights holder – the irrigator who is able to realise the profit on sale.

Not only does under recovery of costs increase the profit that irrigators can gain from trading water, but the under recovery of costs can also induce marginal and inefficient irrigators and irrigating enterprises to stay in the industry and resist engaging in trade when this would be the most logical and rational thing for them to do. Moreover, the underrecovery of costs increases the amount that must be paid if water is transferred to other users, such as the environment.

### **Cost-Reflective Pricing**

The Independent Pricing and Regulatory Tribunal of NSW is responsible for setting the prices that State Water, the NSW bulk water supplier, can charge for making its water available. These prices are based on the costs State Water incurs in harvesting, storing and transporting water. In addition, IPART sets prices for the water resource management activities of the Department of Water and Energy (formerly the Department of Natural Resources).

As most of you know, the National Water Initiative (NWI) that COAG agreed to in 2004 included the adoption of cost-reflective pricing for water, the development of water trading systems, separating the title of land from water titles, and the provision of water for environmental purposes. The 2004 NWI built on an earlier series of water reforms adopted in 1994.

Since the 1994 COAG Water Reforms, pricing regulators, such as IPART in NSW, have worked diligently, in association with water agencies, to unravel problems and issues relating to water costs that were a century in the making. The stage has now been reached in NSW where consumption charging is now the rule for most rural water. Prices of water and related services now better reflect the costs of these services.

The prices set by IPART for bulk water for NSW irrigators in 2006 are expected to fully recover both the operational and future capital expenditure costs for 95 per cent of the irrigated water sold in NSW by 2009/10, with the price of the remaining water that is not fully cost recovered being even higher. In addition, the structure of irrigated water charges was altered so that the component that is related to the volume of water consumed accounts for 60 per cent of a typical irrigator's bill in a normal year. IPART will be continuing with its work to achieve and maintain cost-reflective pricing of bulk water in NSW and expects to commence its next review of bulk water prices (to apply from 1 July 2010) in the middle of 2009.

With the passing of the Commonwealth Water Act in 2007, the ACCC is to take on the role of price regulation in the Murray Darling Basin. Although IPART will undertake the next review of water pricing for NSW, the future role of IPART and other state based regulators is uncertain in the longer term.

We are concerned that legislative shortcomings in the Commonwealth's Water Act may limit achievement of full cost recovery. For example, while the ACCC has the power to regulate existing water charges, neither the Commonwealth Minister or the ACCC has the power to require that a charge can be introduced. While NSW recovers 52% of the costs of water resource management through user charges (over the current determination), other states such as Queensland recover far less. This situation is unfair to NSW irrigators and distorts the efficient allocation both of water and other resources. However, a state government could continue to achieve only a low level of cost recovery simply by failing to introduce the relevant charges.

The Intergovernmental Agreement on Murray-Darling reform (signed in July 2008) goes some way to address this shortcoming in the legislation.<sup>8</sup> However further action by the Commonwealth Government at a political level is needed to redress the effectiveness of the legislation and ensure the effectiveness of the ACCC's role.

IPART is also concerned about the Commonwealth's own adherence to good pricing policy. For instance, the Commonwealth and States jointly fund the Murray-Darling Basin Authority for works that clearly benefit farmers. The NSW Government's share of these costs is recovered through bulk water charges, where those works benefit farmers. But these cost-reflective pricing rules are not being applied to works funded by the Commonwealth Government, despite its insistence that the States abide by them. There are also a number of payments and concessions made by the Commonwealth to improve the supply of water (such as projects under the *Water for Future* plan) for which no cost recovery is anticipated.

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<sup>8</sup> The *Water Amendment Act 2008* (which commenced on 15 December 2008) gives effect to the Intergovernmental Agreement.

## Over Allocation of Entitlements to Water

The States and territories have in the past issued more entitlements to water than can be delivered by the water systems. However, the NSW government has already taken action to address the problem of over allocation of water entitlements.

In 2000 the NSW Government introduced legislation to revise the water management framework. Under that legislation water management plans have been developed for the major river systems in NSW, which specify each user's access rights as a share of the water available. In effect, an assessment is made each year of how much water will be available and an irrigator has an entitlement to a share of that total. Because the various shares add only to one hundred per cent, the water is no longer able to be over-allocated as it was previously.

This does not always mean that irrigators always enjoy the level of security to water that they would like. No doubt an irrigator would like to have his or her water entitlement met in full 100 per cent of the time. The reality is, climate conditions in Australia being what they are, guarantees of water security can only be given at great cost in terms of increased storage dams etc. There is a trade off between cost and security. Irrigators can have greater security if they are prepared to pay more for their water, provided there are additional sources of water to store. Where water is at or above its sustainable yield, the cost/security trade off continues to apply but increased security can be bought by irrigators only by acquiring other water licenses through trade.

Because increased security can be purchased by irrigators only at considerable cost, entitlements are unlikely to be met in full for the majority of the time. As a consequence it is irrigators who have to bear the risk of water shortfalls in time of drought.

The CSIRO was commissioned by the Commonwealth Government to undertake a thorough assessment of the sustainable yield of the Murray-Darling basin. The report was published in October 2008<sup>9</sup> and throws new light on the question of security of supply. The Commonwealth Government's proposal to allocate \$3.1 billion to buy back water entitlements and assist irrigators in the unviable or inefficient parts of the water industry to exit will also improve the security of water entitlements.

## Interstate Trade in Water

The introduction of titles to water that are separate from those to land and water sharing plans that allocate to consumptive use only the water available to that use, mean that the preconditions for water trading have been met. As we have seen, a great deal of water trading within states already takes place.

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<sup>9</sup> CSIRO, *Water Availability in the Murray-Darling Basin: A Report from CSIRO to the Australian Government*, October 2008.

So far, interstate trading has been relatively limited.<sup>10</sup> This is because in reality water – or more exactly a water entitlement – is not a homogenous product. In particular, the relative security of water entitlements differs between the states and between catchments. This is because of different supply characteristics across catchments, such as rainfall, dam capacity and run-off. Consequently, it has taken time to agree on how to take into account the different levels of security of water entitlements in any interstate water trading framework. Similarly, compatible systems that properly account for those water trades have inevitably taken time to be developed. NSW, Victoria and South Australia now have arrangements in place to allow for interstate trading.<sup>11</sup>

The Commonwealth Government has expressed concern about trading barriers in Victoria and is pressuring the Victorian Government to remove them. These include a cap of 4% on the amount of water that can be traded outside an irrigation district and the prevention of non-landholders (such as the Commonwealth Government) from purchasing more than 10% of water entitlements in a system.<sup>12</sup>

### **Water for Environmental Purposes**

One of the main aims of the National Water Initiative is the provision of adequate water for environmental purposes – to restore, maintain and protect river health.

Some people consider that the present market-based system for managing rural water is flawed on these grounds. Their principal criticism is that the share for the environment was set too low to maintain the health of our river systems, and especially the health of the Murray-Darling system. In particular they argue that in our push to establish a market for water there has been insufficient attention to the sustainability of water supplies, and that there is a need for more bio-physical research.

In fact the water sharing plans for NSW rivers do provide for environmental flows to rank ahead of irrigator's entitlements, so that these flows are much less affected when allocations are low. In addition, safeguards have been included to ensure water trading is environmentally benign, but the critics argue that "given their complexity, it is hard to believe that water trading will really be conducted in this way."

For example, it is not just a matter of defining the sustainable extraction level, but the government also needs to decide how close to approach this level before further intervening, on behalf of the environment. The environmentalists' concern is that "the capacity to implement and enforce the present water management regime is well beyond the current institutional capacity of most catchment bodies and of available hydrological knowledge."

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<sup>10</sup> In 2007/08, around 16% of all temporary trades (by volume) were interstate trades. There was only one permanent interstate trade. See: National Water Commission, *Australian Water Markets Report 2007-08*, December 2008, p 22 and 24.

<sup>11</sup> National Water Commission website.

<sup>12</sup> The Age, *Victoria holds out on water trading*, 5 November 2008.

Judgments can differ, however, about the appropriate share of water and who should benefit. And often it is necessary in public policy to make a decision without perfect knowledge. Thus there is inevitably an element of compromise in balancing the claims of the environment and the irrigators.

Of course, trading will not help in achieving environmental outcomes in situations where extreme drought means there are severe limits on the availability of any water at all. No system of water allocation, whether market based or administered will work where there is simply too little water available.

In future, under more “normal” water availability conditions, it will be possible to further increase the share of water available for environmental flows, if such action were considered warranted, but it would generally require the government to buy out some of the irrigator's entitlements. Indeed, the NSW Government has already implemented an environmental buy-back scheme (the *RiverBank* program) and has committed \$105 million over five years to 2011.<sup>13</sup> As noted earlier, the Commonwealth Government's *Water for the Future* plan has provided \$3.1 billion (over 10 years) for buy backs for river health purposes.

Such buy backs simply provide a more secure water supply for the environment and the remaining entitlement holders. However, they do involve a higher price, which reflects the scarcity value of the water, and will therefore cost more than if the environment had received a higher allocation in the original distribution. We suspect that this higher price is what the environmental movement is objecting to most. But we should not forget that persuading the irrigators to forego what they saw as their former higher entitlement to water has not been easy. To date it has only been made possible by turning their previous de facto entitlement into a de jure entitlement, and allowing them to trade at a price that reflects its scarcity value.

## Concluding Comments

In my talk today I have sought to consider a number of issues concerned with water pricing, allocation and trading.

Governments have developed and implemented sophisticated, reasoned and considered approaches to water management, regulation and trading. There are however a number of measures that need to be taken to further develop trading both within and across jurisdictional boundaries. These include developing better conversion mechanisms to aid in understanding the differences in security of the different state based licensing regimes.

Where water is traded the trade price will reflect the market price of water including its scarcity value. Prices will increase in times of drought and fall in times of abundance. The market evidence that we have seen indicates that this is occurring.

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<sup>13</sup> The Commonwealth Government has provided a further \$72 million. See: National Water Commission, *Australian Water Markets Report 2007-08*, December 2008, p 30.

There is also a need to ensure that the cost reflective prices that water suppliers such as State Water in NSW charge irrigators properly and fully reflect the costs of renewing these systems into the future where the irrigators wish to have these systems maintained.

Where prices do not reflect the full cost of supply not only will irrigators receive a windfall gain but inefficient and unviable irrigators will be encouraged to remain in the industry.

If the Commonwealth Government does invest \$6 billion in upgrading irrigation infrastructure that benefits users, then the cost of this investment should be recovered from users. Such an approach would support a market-based approach to allocating water. Moreover, the willingness of users to pay provides the best available indication that the investment is worthwhile.

At the end of the day trade is something that takes place between willing sellers and willing buyers. Market prices are determined through the interaction of supply and demand. Governments can facilitate and encourage trading but they cannot make it happen. For example, some farmers may choose not to sell their water entitlements even where outside observers think they should because they value for farming lifestyle in itself or lack-of attractive alternative employment opportunities.

Our view is that trading is an important factor leading to improvements in the use of water. We are likely to see further extension and development of trading in water. However, trading is likely to be only one part of a broader suite of policy measures to address the problems of our inland rivers.